

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. and 2. (canceled).

3. (currently amended): A method for producing an RE-containing alloy represented by formula R(T_{1-x}A_x)_{13-y} (wherein R represents at least one species selected from among La, Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Tm, Yb, Gd, and Lu; T represents at least one species selected from among Fe, Co, Ni, Mn, Pt, and Pd; and A represents at least one species selected from among Al, As, Si, Ga, Ge, Mn, Sn, and Sb (0.05 ≤ x ≤ 0.2; and -1 ≤ y ≤ 1)) comprising:

a melting step of melting alloy raw materials at 1,200 to 1,800°C; and

a solidification step of solidifying the molten metal produced through the above melting step by rapidly quenching the molten metal, to thereby form the RE-containing alloy, wherein the solidifying is performed at a cooling rate of 10² to 10⁴°C/second, as measured at least within a range of the temperature of the molten metal to 900°C, and

wherein in the solidifying-solidification step, the molten metal is rapid-quenched through any of strip casting, centrifugal casting with a tundish having a rotatable disk, and centrifugal casting.

4. (previously presented): A method for producing the RE-containing alloy according to claim 3, wherein the solidifying is performed by rapidly quenching the molten metal through strip casting, to obtain strips having a thickness of 0.1 to 2.0 mm.

5. (previously presented): A method for producing an RE-containing alloy represented by formula $R(T_{1-x}A_x)_{13-y}$ (wherein R represents at least one species selected from among La, Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Tm, Yb, Gd, and Lu; T represents at least one species selected from among Fe, Co, Ni, Mn, Pt, and Pd; and A represents at least one species selected from among Al, As, Si, Ga, Ge, Mn, Sn, and Sb ($0.05 \leq x \leq 0.2$; and $-1 \leq y \leq 1$)) comprising:

melting alloy raw materials at 1,200 to 1,800°C;

solidifying the molten metal produced through the above melting step by rapidly quenching the molten metal, to thereby form an RE-containing alloy, wherein the solidifying is performed at a cooling rate of 10^2 to 10^4 °C/second, as measured at least within a range of the temperature of the molten metal to 900°C, and

heat treating by heating at 900 to 1,200°C the RE-containing alloy that is produced through the solidifying, to thereby form an NaZn₁₃ phase.

6. (previously presented): The method for producing an RE-containing alloy according to claim 5, wherein the NaZn₁₃ phase is formed through the heat treating, which is performed for a period of from one minute to 200 hours.

7. (previously presented): The method for producing the RE-containing alloy according to claim 6, wherein the heat treating is performed at a temperature of 1080°C to 1200°C and for a period of from 3 to 42 hours.

8. (currently amended): An RE-containing alloy which is obtainable through the method of any one of claims 34 to 4.

9. (original): An RE-containing alloy, which is represented by the formula $R(T_{1-x}A_x)_{13-y}$ (wherein R represents at least one species selected from among La, Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Tm, Yb, Gd, and Lu; T represents at least one species selected from among Fe, Co, Ni, Mn, Pt, and Pd; and A represents at least one species selected from among Al, As, Si, Ga, Ge, Mn, Sn, and Sb ($0.05 \leq x \leq 0.2$; and $-1 \leq y \leq 1$)), and which comprises an R-rich phase, having a relatively high rare earth metal (R) content, and an R-poor phase, having a relatively low rare earth metal (R) content, wherein the R-rich phase and the R-poor phase are dispersed at a phase spacing of 0.01 to 100 μm .

10. (original): An RE-containing alloy, which is represented by the formula $R(T_{1-x}A_x)_{13-y}$ (wherein R represents at least one species selected from among La, Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Tm, Yb, Gd, and Lu; T represents at least one species selected from among Fe, Co, Ni, Mn, Pt, and Pd; and A represents at least one species selected from among Al, As, Si, Ga, Ge, Mn, Sn, and Sb ($0.05 \leq x \leq 0.2$; and $-1 \leq y \leq 1$)), wherein the alloy has an $NaZn_{13}$ phase content of at least 90 vol.%.

11. (original): A magnetostrictive device provided from the RE-containing alloy according to claim 10.

12. (original): A magnetic refrigerant provided from the RE-containing alloy according to claim 10.

13. (withdrawn): An RE-containing alloy, which is represented by a compositional formula of $R_rT_tA_a$ (wherein R represents at least one rare earth element selected from among La, Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Tm, Yb, Gd, and Lu; T collectively represents transition metal elements containing at least Fe atoms, a portion of the Fe atoms being optionally substituted by at least one species selected from among Co, Ni, Mn, Pt, and Pd; A represents at least one element selected from among Al, As, Si, Ga, Ge, Mn, Sn, and Sb; and r, t, and a have the following relationships: $5.0 \text{ at.\%} \leq r \leq 6.8 \text{ at.\%}$, $73.8 \text{ at.\%} \leq t \leq 88.7 \text{ at.\%}$, and $4.6 \text{ at.\%} \leq a \leq 19.4 \text{ at.\%}$) and having an alloy microstructure containing an NaZn₁₃-type crystal structure in an amount of at least 85 mass% and α -Fe in an amount of 5-15 mass% inclusive.

14. (withdrawn): A method for producing an RE-containing alloy powder, comprising pulverizing, by mechanical means, the RE-containing alloy according to claim 13 to a powder having a mean particle size of 0.1 μm to 1.0 mm.

15. (withdrawn): An RE-containing alloy powder comprising an RE-containing alloy according to claim 13, which has a mean particle size of 0.1 μm to 1.0 mm.

16. (withdrawn): A magnetic refrigerant comprising the sintered RE-containing alloy powder according to claim 15, wherein the Curie temperature of the magnetic refrigerant has been controlled through absorption of hydrogen in the sintered RE-containing alloy.

17. (withdrawn): A method for producing a sintered RE-containing alloy, which comprises compacting an RE-containing alloy powder produced through a method for producing an RE-containing alloy powder according to claim 14, and sintering the compact.

18. (withdrawn): The method for producing a sintered RE-containing alloy according to claim 17, wherein the sintering is performed at 1,200°C to 1,400°C.

19. (withdrawn): The method for producing a sintered RE-containing alloy according to claim 17 or 18, wherein, after completion of sintering the RE-containing alloy powder, the sintered alloy is maintained in a hydrogen atmosphere at 200°C to 300°C, to thereby absorb hydrogen into the sintered alloy.

20. (withdrawn): A sintered RE-containing alloy, which is formed by compacting the RE-containing alloy powder according to claim 15, and sintering the compact.

21. (withdrawn): A magnetostrictive material comprising the sintered RE-containing alloy according to claim 20, wherein the Curie temperature of the magnetostrictive material has been controlled through absorption of hydrogen into the sintered RE-containing alloy.

22. (withdrawn): A magnetic refrigerant comprising the sintered RE-containing alloy as recited in claim 20, wherein the Curie temperature of the magnetic refrigerant has been controlled through absorption of hydrogen into the sintered RE-containing alloy.

23. (new): The method for producing an RE-containing alloy according to claim 3, wherein, in the melting step, the alloy raw material is melted in an inert gas atmosphere at 0.1 to 0.2 MPa.